M/035/009

State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY

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June 4, 1998

Mr. Steve Lackey
Kennecott Barneys Canyon Mining Co.
P.O. Box 311
Bingham Canyon, UT 84006-0311

Dear Mr. Lackey:

Subject: Draft renewed ground water discharge permit, No. UGW350001

Enclosed please find the draft renewed ground water discharge permit and statement of basis for Barneys Canyon Mine. Please review this draft and respond to us if you have any comments. Upon your concurrence with the permit conditions, the draft permit will be made available for public comment for a 30-day period. Following resolution of any comments received from the public, the final permit will be issued. Please contact me if you have any questions.

Sincerely,

Mark T. Novak

Mark Novak,environmental Scientist
Ground Water Protection Secton

MN:fb

cc: Salt Lake City/County Health Dept.
Wayne Hedberg, DOGM

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Permit No. UGW350001

STATEMENT OF BASIS

Heap Leach Operation

KENNECOTT BARNEYS CANYON MINING CO.
P.O. Box 311
Bingham Canyon, Utah 84006-0311

I. DESCRIPTION OF FACILITY

Barneys Canyon Mine operates a cyanide gold leaching facility west of Salt Lake City about two miles north of Copperton, Utah, on the east flank of the Oquirrh Mountains. Ore is obtained from mine pits southwest of the leach pads. The site is an east sloping alluvial apron at an elevation of about 5,500 feet and precipitation is light.

The leach pads, processing ponds and plant are operated under the concept that there is no intentional direct discharge to waters of the State. All fluids are recirculated to the sprinkler system atop the leach pads. Gold ore on the leach pad is leached with a high pH solution containing NaCN. The high pH is maintained by additions of NaOH. Cyanide solution containing gold is collected at the base of the heap pad and piped to and stored in a pregnant pond. The solution is pumped from the pregnant pond to the processing plant where the gold is removed by a carbon absorption process and the remaining solution flows by gravity to the barren pond. Additional NaOH and cyanide are added to the solution stored in the barren pond and pumped to the sprinkler system atop the heap pads. Additional water is added at this point to make up for the water lost by evaporation.

A. DESCRIPTION OF LEACH SOLUTION

The leach solution generally contains about 0.3 pounds of caustic soda (NaOH) per thousand gallons of water and 0.4 to 1.25 pounds sodium cyanide (NaCN) per thousand pounds of water. The solution equivalent is about 50 ppm to 150 ppm NaCN. The solution is pumped in pipes to the top of a leach pad where it is sprayed at the rate of about 5 to 8 gallons per day per square foot. NaOH is required to maintain a pH greater than 9, in order to keep the NaCN in solution. The chemical composition of the process solutions varies as they move through different stages of the gold extraction process. At all stages of the process, the solutions have high sulfate content, generally greater than 2000 mg/l. Metals listed in Table 1 of the Ground Water Protection Regulations are present at low to moderate concentrations, generally below 20 mg/l. In some parts of the gold extraction process, nickel concentrations are very high, over 900 mg/l in some samples.

B. DESCRIPTION OF PROCESS FLUID CONTROL TECHNOLOGY AND LEAK DETECTION SYSTEM

Each leach pad consists of several cells. The leach pad's vertical configuration starting at the top consists of several layers:

1. Three foot thick process solution collection system of fine grained ore, with head less than 12 inches.

2. Sixty mil HDPE primary liner.

3. Twelve inch minimum secondary soil liner having a hydraulic conductivity of 1.0×10^{-7} cm/sec or less.

4. Below the clay, a 6-inch leak detection media having a hydraulic conductivity of 1.0×10^{-3} cm/sec or higher. At the bottom of the media, slotted sloping PVC leak detection pipes have been installed.

5. Six inch minimum engineered secondary soil liner having a hydraulic conductivity of 1.0×10^{-6} cm/sec or less.

In the event of a break in the HDPE liner, and if fluids are able to migrate through the clay liners and the permeable medium, they will flow through the PVC pipe into sumps or ports where they will be detected. The pad or sections of the pads where the break occurred can then be shut down.

C. DESCRIPTION OF GEOLOGY

The leach site is located on the east flank of the Oquirrh Mountains on the surface of an old east dipping alluvial fan. The fan deposit ranges from 100 to 200 feet thick and consists of sand, gravel and clay. Volcanic rocks underlie the alluvial material. These rocks consist of agglomerates, mudflow deposits and lava flows, and are probably less permeable than the overlying alluvium. The water table slopes downward to the east, and according to data from the monitoring wells ranges from 82 to 380 feet in depth. The site is, therefore, part of the recharge area for the aquifers in the Salt Lake Valley. A production well (BC-280) for the site obtains about 200 gpm.

II. CLASSIFICATION OF GROUND WATER

Based on monitoring done for the permit to date, ground water in the mine area is classified as Class II. On the basis of sampling done since the permit was originally issued, background water quality, protection levels and out-of-compliance levels have been revised. The protection levels at the site for total dissolved solids are 1.25 times the background value. When a contaminant is present in a detectable amount in the background concentration, the concentration of the pollutant may not exceed 1.25 times the background concentration, or exceed 0.25 times the ground water quality standard, whichever is greater. When a contaminant is not present in a detectable amount, the concentration of the pollutant may not exceed 0.25 times the ground water quality standard, or exceed the limit of detection, whichever is greater.

III. PERMIT CONDITIONS

A. To maintain compliance with Ground Water Protection levels, best available treatment technology is used. This requires no discharge of process fluids from the facility to ground water. Well monitoring is required to demonstrate compliance is maintained with ground water protection levels. Maintenance of BAT will be demonstrated by the absence of process fluids in leak detection sumps of pads and ponds.

A closure document shall be submitted for review and approval six (6) months prior to beginning of neutralization of any pads in the project. The neutralization criteria will either be as adopted in rules by the Water Quality Board at the time of decommissioning or as approved in writing at the time of decommissioning if prior to adoption of rules. **In no case shall the neutralization criteria for this heap leach project result in degradation of the surface or groundwater quality including beneficial uses thereof in the vicinity.**

Neutralization of ore heaps based on the approved criteria must be verified in three consecutive monthly samples of heap leach pad rinsate. The sampling procedure must be submitted in the neutralization plan for review and approval.

Leach pads and waste rock dumps must be reclaimed in such a way that ground water pollution is prevented.

B. Leak Detection System--Monitoring

All leak detection sumps, pipes and ponds are to be monitored daily during use of the

heap leach pads to demonstrate that best available technology performance is maintained. In the event that a verified leak is detected beneath the pads or ponds, it is to be reported by telephone within 24 hours and in writing within 5 days to the Division of Water Quality (DWQ).

C. New Construction

A construction permit must be obtained from DWQ for construction of any new facilities which may cause a discharge of pollutants to waters of the state. Such construction may also require modification of this permit.

D. Ground Water Compliance Monitoring

All monitoring wells are to be sampled monthly until 12 samples are available for water quality compliance monitoring. Thereafter upgradient wells are to be sampled twice yearly and the downgradient wells quarterly. Ground water quality protection levels described in the permit will be used to make any determinations of possible out of compliance. Water quality data is to be collected and reported to the DWQ on a quarterly basis. In the event that a problem is determined, corrective and remedial action will be determined by the company and the DWQ. As a result of detection of cyanide in monitor well BC-848, the permittee conducted an investigation which involved drilling four new monitor wells. These wells will be included in this renewed permit as points of compliance. Permit conditions require establishing background water quality and protection levels for these wells.

Monitoring parameters have been changed in this version of the permit. Previous monitoring was for metals listed in Table 1 of the ground water protection regulations. These metals do not exist in detectable concentrations in the background, as revealed by monitoring during the previous permit term. They are present in relatively low concentrations in the process water solutions and they are also not particularly mobile in aquifer materials. Under the renewed permit, monitoring will be for parameters which are indicative of a release of process waters. These parameters include major ions, which are present in different proportions in the ground water as compared to the process solutions; nickel, which is present in high concentrations in the process solutions but not the ground water; cyanide, which is a synthetic chemical present in the process solutions but not naturally present in the ground water; and nitrate, a degradation product of cyanide. Analysis for major ions also includes sulfate, which is present in high concentrations in the process water solutions. Most of these parameters are highly mobile in ground water and should result in early detection of a release of process waters. If monitoring for these parameters reveals leakage from the mine facilities, the permittee must monitor

for other contaminants which may have been released as part of a Contaminant Investigation as required under R317-6-6.15.

Background levels for the Table 1 metals will be established at the new monitor wells; sufficient data already exists to establish background concentrations of these metals at existing wells.

E. Mine Pit Water

Water from two mine pits, after Primary sediment treatment, is to be used for dust suppression, or piped for use to the Copperton concentrator. Other use or disposal will require approval from the Division of Water Quality.

F. Compliance Schedule

As a result of cyanide detections in monitor well BC-848, the permittee conducted an investigation into the extent of any contaminated ground water at the site. This included installation of four new monitor wells. These wells shall become points of compliance for this renewed permit. In order to establish background concentrations of monitoring parameters and metals, as a compliance schedule item the permittee must collect at least eight samples from these wells over a period of at least one year. Limited data collected from well BC-850 to date suggests there may be an increasing trend in some contaminant concentrations, which would affect the validity of using the background data in statistical calculations. As a compliance schedule item, in addition to the background monitoring required for the other new monitor wells, the permittee shall prepare a report which evaluates whether there actually is a trend of increasing contaminant concentrations in BC-850, and if so, evaluating whether the permitted facilities were the source of the trend and whether well BC-850 would be a suitable point of compliance for this permit.

Temporary storage of sulfide ore was permitted in the original version of the permit under conditions which are no longer appropriate for the actual operating conditions at the mine and which would have expired at the end of 1998. The permittee has developed new plans for managing the sulfide ore stockpiles which reflect changes which were not anticipated in earlier versions of the permit. This new language shall be incorporated into the Waste Rock Management Plan which is part of Barneys Canyon Environmental Compliance Manual.

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Permit No.: UGW350001

STATE OF UTAH
DIVISION OF WATER QUALITY
UTAH WATER QUALITY BOARD
SALT LAKE CITY, UTAH 84114-4870

GROUND WATER DISCHARGE PERMIT

In compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5,Utah Code Annotated 1953, as amended, the Act,

Kennecott Barneys Canyon Mining Company
P.O. Box 311
Bingham Canyon, Utah 84006-0311

is granted a ground water discharge permit for the operation of a Cyanide Heap Leach Facility located at Barneys Canyon about 2 miles north of Copperton, Utah. The facility is located mainly on a tract of land west of Salt Lake in Sections 4 and 5, Township 3 South, Range 2 West, Salt Lake Base and Meridian, Salt Lake County, Utah to wit:

The permit is a renewal of the original ground water discharge permit issued April 9. 1993 and covers existing facilities, mining activities and reclamation at the minesite.

The permit is based on representations made by the permittee and other information contained in the administrative record. It is the responsibility of the permittee to read and understand all provisions of this permit.

The facility shall be constructed and operated in accordance with conditions set forth in the permit and the Utah Ground Water Quality Protection Regulations.

This permit shall become effective _____

This permit shall expire April 9, 2003.

_____
Executive Secretary
Division of Water Quality

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PART I. SPECIFIC PERMIT CONDITIONS

A. GROUND WATER CLASSIFICATION. The ground water classification is a Class II Drinking Water Quality Ground Water within the facility boundary, based on well samples from monitor wells at the site. Background ground water quality is summarized in Tables 1 and 2. All parameters in Tables 1 through 4 are in units of mg/l, except for pH.

B. GROUND WATER STANDARDS AND PROTECTION LEVELS. Based on samples from the facility monitoring wells, the ground water standards and protection levels for the required parameters are listed in Tables 3 and 4.

1. Ground Water Standards - The permittee shall comply with all the ground water standards contained in Utah's Ground Water Quality Protection Regulations (R317-6). The ground water around the site must meet the applicable protection level for each of the standards contained in R317-6-2 even though this permit does not require monitoring for each specific chemical listed in the regulations. Therefore, the permittee shall not discharge compounds such as metals, leachates, acid, pesticides or volatile organic compounds not listed in the permit.

2. Protection Levels - The protection levels listed in Tables 3 and 4 are based on compounds that may be in the discharge to the ground water, and must be met at the down gradient wells. Monitoring of ground water will demonstrate that protection levels in wells have not been exceeded.

3. Exceedance of Protection Levels - Out-of-compliance will be determined in accordance with Utah Admin. Code R317-6-6.6. Out of compliance exists when two (2) consecutive samples from a monitoring well exceed the permit limit and the mean by two standard deviations, as calculated from the background data set.

C. PERMITTED FACILITIES.

1. Leach Pads - Design and construction of existing pads BC-1, BC-2, BC-3, BC-4 and BC-5 incorporated best available technology at the time. They were built as designed according to the construction permit issued March 24, 1989 with a liner system as follows:

   a. Three foot thick solution collection system of fine grained ore, with head less than 12 inches.

   b. 60 mil HDPE primary liner.

   c. Twelve inch minimum secondary clay liner having a hydraulic conductivity of 1.0×10^{-7} cm/sec or less.

   d. Below the clay, a 6-inch leak detection media having a hydraulic conductivity of 1.0×10^{-3} cm/sec or more was built. At the bottom of the media, slotted sloping PVC leak detection pipes were installed to drain to a sump or port that can be monitored by instruments or visually inspected.

   e. Six inch minimum engineered secondary clay liner having a hydraulic conductivity of 1.0×10^{-6} cm/sec or less.

2. Process Water Ponds - Two process ponds with a total capacity of 10,800,000 gallons were built and designed according to the construction permit issued March 24, 1989. They incorporated best available technology and have a liner system as follows:

   a. 60 mil HDPE primary line

   b. 1 pm per foot HDPE drainage net

   c. 8 oz. per square yard geotextile

   d. 12 inches of 1.0×10^{-7} centimeters per second clay

   The bottom of each pond is graded to one corner where a leak detection sump is located. An 8 inch standpipe is installed to the sump, which allows the entrance of a probe, or portable pump.

   A new process pond with a total capacity of 4,300,000 gallons has been built west of the existing process ponds described above, under a construction permit dated August 2, 1995. The pond incorporates Best Available Technology and has a liner system as follows:

a. 60 mil HDPE line

b. drain net with a transmissivity of 10 gal/min/ft.

c. 60 mil HDPE liner

d. 12 inches of 1.0×10^{-7} centimeters per second clay

A leak detection system with a double lined sump and an eight inch standpipe, similar to the system for the existing ponds, is to be constructed to the drain net. The allowable leakage rate of 200 gallons per acre per day is a BAT performance standard.

A new holding tank for liquid cyanide has been constructed within the pond area to receive cyanide from tanker trucks, under the construction permit of August 2, 1995. The holding tank has been built on a concrete pad that will drain to the ponds in the event of spillage.

3. Future Construction

The permittee must obtain a construction permit from the Division of Water Quality before construction may begin on any new facilities which may cause a discharge of pollutants to waters of the state. Depending on the nature of these facilities, modification of this ground water discharge permit may also be required.

	BC 280	BC 281	BC 282	BC 283	BC 284	BC 285	BC 31	BC 848	BC 849	BC 496
TDS	754	664	796	583	735	631	605	821	953	1028
Nitrate	<0.05	0.78	1.5	1.3	1.1	0.21	0.96	1.5	0.18	0.18
Sulfate	128	40	63	27	40	31	63	107	106	135
Nickel	to be determined following accelerated monitoring									
Cyanide am-chlor	<0.004[1]	<0.004[1]	<0.004[1]	<0.004[1]	<0.004[1]	<0.004[1]	<0.004	<0.004[1]	<0.004[1]	<0.004
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Copper	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.001	<0.05	<0.05	<0.05
Mercury	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Selenium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH	7.03	7.27	7.39	7.3	7.29	7.27	7.36	7.37	7.26	7.63

Table 1. Background water quality at existing wells.

1. Preliminary estimate based on available data.

	BC 850	BC 851A	BC 851B	BC 852
TDS	969	894	702	571
Nitrate	4.8	1.0	0.4	1.4
Sulfate	55	153	88	24
Nickel (1)				
Cyanide am-chlor	<0.004	<0.004	<0.004	<0.004
Cadmium	<0.01	<0.01	<0.01	<0.01
Chromium	<0.05	<0.05	<0.05	<0.05
Copper	<0.05	<0.05	<0.05	<0.05
Lead	<0.05	<0.05	<0.05	<0.05
Mercury	<0.0005	<0.0005	<0.0005	<0.0005
Selenium	<0.01	<0.01	<0.01	<0.01
Silver	<0.01	<0.01	<0.01	<0.01
pH	7.24	7.27	7.24	7.31

Table 2. Preliminary background water quality in new monitor wells based on available data.

(1) To be determined after accelerated monitoring.

	G.W. Standard	BC-282		BC-283		BC-284		BC-285		BCW-31		BC-848		BC-849		BC-496	
		a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b
TDS		995	995	729	729	919	919	789	789	756	756	1026	1026	1191	1191	1285	1285
Nitrate	10	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Sulfate		79	81	34	39	50	60	39	41	79	79	134	141	132	140	169	169
Nickel	to be determined following accelerated monitoring																
Cyanide am - chlor	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Cadmium	0.005	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Chromium	0.1	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Copper	1.3	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Lead	0.015	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Mercury	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Selenium	0.05	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
Silver	0.1	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.
pH	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5

Table 3. Protection and Out-of-Compliance Levels for Existing Monitor Wells.

a. Protection level

b. Out-of-compliance level; greater of protection level or [mean + (2 x standard deviation)]

	BC 850	BC 851A	BC 851B	BC 852
TDS	1211	1118	878	714
Nitrate	6.0	2.5	2.5	2.5
Sulfate	69	191	110	30
Nickel	to be determined following accelerated monitoring			
Cyanide am-chlor.	0.05	0.05	0.05	0.05
Cadmium	0.01	0.01	0.01	0.01
Chromium	0.025	0.025	0.025	0.025
Copper	0.33	0.33	0.33	0.33
Lead	0.05	0.05	0.05	0.05
Mercury	0.0005	0.0005	0.0005	0.0005
Selenium	0.025	0.025	0.025	0.025
Silver	0.025	0.025	0.025	0.025
pH	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5

Table 4. Preliminary Protection Levels for New Monitor Wells, based on available data.

D. COMPLIANCE MONITORING. During the period beginning with the effective date of the permit and lasting the term of the permit or as stated in an approved closure plan, the permittee shall demonstrate maintenance of best available technology (BAT) and demonstrate that ground water protection levels have not been exceeded.

1. Ground Water Monitoring - The wells listed in Table 5 shall be monitored to demonstrate compliance with Part I. B.

Table 5--Monitoring Wells Located with Kennecott Coordinate System

Well Number	Northing	Easting	elevation (top of casing)	screened depth	gravel pack depth
Upgradient Wells					
Potable well BC-280	N31350	E9710	6229	420-930	384-1010
BC281	N31733	E9976	6172	157-197	134-197
Existing Downgradient Compliance Monitoring Wells					
BC282	N31929	E16958	5528	155-205	146-205
BC283	N30463	E17248	5577	176-226	164-229
BC284	N28189	E16954	5578	418-468	409-469
BC285	N29480	E14795	5770	81-131	72-132
BCW-31 (Copperton)	N27100	E20100	5368	149-1218	--
BC848	N30090	E17070	5541	132-172	119-200
BC849	N30546	E13745	5753	206-226	195-226
BC496	N31224	E16854	--	206-226	195-226
New Downgradient Compliance Monitoring Wells					
BC850	N28352	E17095	5551	205-245	200-253
BC851A	N30161	E18064	5454	58-78	52-78
BC851B	N30158	E18061	5453	120-160	115-164
BC852	N28367	E18240	5543	160-200	155-206

Procedures for Well Monitoring.

a) Routine Monitoring

All monitor wells shall be analyzed for the following parameters:

Field Parameters: pH, conductivity, temperature, ground water elevation. Laboratory Parameters: total dissolved solids, major ions (Na, Ca, K, Mg, Cl, SO_4, HCO_3, CO_3), nitrate, nickel, cyanide amenable to chlorination.

b) Accelerated Background Monitoring

Monitor wells BC-851A, BC-851B, and BC-852 shall be sampled at least eight times over a one-year or longer time span for all the parameters listed in (a) above, and the following metals: Pb, Hg, Se, Ag, Cu, Cd, Cr, Zn, Ba, As. Data from background sampling shall be used to establish background concentrations of these constituents and also protection levels.

All other existing monitor wells shall be sampled at least eight times over a one-year or longer time span for nickel and cyanide amenable to chlorination.

c) Monitor Well BC-850

Well BC-850 shall be monitored for all the parameters cited in (a) and (b) above monthly for eight consecutive months. After this sampling has been completed, the permittee shall submit a report on the observed ground water chemistry in this well in accordance with Part I.I(2).

d) Frequency

Upgradient wells (BC-280 and BC-281) are to be sampled twice yearly. The remaining, downgradient wells shall be sampled quarterly. Ground water elevations shall be measured in all monitor wells quarterly.

e) Sampling

Sampling shall be conducted according to the sampling plan contained in the Environmental Compliance Manual (version dated January 31, 1997) Grab samples shall be taken of the ground water only after removal or purging of the equivalent of three casing volumes of standing water from the well bore. For low-yielding wells where this is not possible, evacuation procedures shall conform to the RCRA Ground Water Monitoring Technical Enforcement Guidance Document.

f) Laboratory Approval

All analyses shall be performed by a laboratory certified by the State of Utah according to methods cited in R317-6-6.3A(13). Detection limits for all parameters are to be equal or less than the ground water standard, or the ground water protection level, which ever is less in Table 2. Within 30 days of the effective date of permit renewal, the permittee shall submit a list of analytical methods used for sample analysis. Other analytical methods shall be used only with permission of the Executive Secretary

g) Damage to Monitoring Wells. If any monitor well is damaged or is otherwise rendered inadequate for its intended purpose, the Executive Secretary, shall be notified within five days in writing.

h) If additional downgradient wells are required, they will be monitored in accordance with the above requirements.

2. Performance Monitoring - No discharge of process fluids from the plant, pads or ponds to ground water is allowed. Maintenance of this performance standard will be demonstrated by monitoring for process fluids in leak detection sumps and lines.

a) Frequency. The leak detection sumps of all operating pads and ponds shall be visually monitored daily during operation for the presence of fluids and the results recorded in a log maintained by the operator.

b) Sampling. Upon detection of fluids in the sumps, samples will be immediately analyzed for the constituents listed in Table 6.

Table 6 - Parameters

Parameter	
pH	sulfate
Cyanide (amenable to chlorination)	nickel

c) Reporting procedures in Part I E.2 must be followed if any process fluid is detected.

E. REPORTING REQUIREMENTS.

1. Routine Reporting - The permittee shall furnish the Executive Secretary quarterly monitoring reports of compliance monitoring. Reports shall include the following information:

(a) Reports of analyses of well samples as required in Part I.D.1

(b) A report of ground water elevations as measured in all monitor wells within a

24-hour period during the quarter covered by the report, and preferably near the time of sampling. The permittee shall use this and any other available data to construct a map of the potentiometric surface of the uppermost aquifer in the vicinity of the leach pads and process water ponds. The map shall be submitted with the quarterly report.

(c) A report on visual inspections of the leak detection systems during the quarter.

Reports shall be submitted according to the schedule in Part II D. Failure to submit the reports by the due date above shall be deemed as non-compliance.

2. Reporting of BAT Failure - A failure of BAT, as defined in Part I.F.2, is to be reported by telephone within 24 hours to the telephone number provided in Part II and in writing within five days to the Division of Water Quality (DWQ) at the address in Part II D. The written submission shall contain:

(a) A description of fluids, their volume or flow, and duration of failure

(b) The cause of failure and

(c) Steps taken or planned to reduce, eliminate or prevent recurrence of the leak

(d) The permittee shall prepare and submit within 30 days unless waived by the Executive Secretary: (1) a plan and time schedule for assessment of the source, extent and potential dispersion of the contamination, (2) an evaluation of potential remedial action required to restore BAT and to restore and maintain ground water quality, so as to ensure that the Ground Water Quality Standards, will not be exceeded at compliance monitoring points.

3. Out of Compliance Reporting - In the event that the facility becomes out of compliance as defined in Part I.F.2, the reporting schedule in Part I.E.2 above will be implemented.

4. Contingency Plan - In the event of a spill of contaminants which may threaten ground water quality, the permittee shall follow the Spill Prevention, Control and Countermeasures Plan contained in the revised Environmental Compliance Manual dated March 4, 1996, or other plan as approved by the Executive Secretary.

F. OUT OF COMPLIANCE STATUS

Information must be provided to the Executive Secretary if the operation becomes out of compliance. Immediate action is required to identify the problem, report, and repair the facility. Out-of-compliance is defined below:

1. Ground Water Monitoring
Exceedence of the compliance levels (Table 2) at any downgradient compliance monitoring well shall constitute noncompliance with this permit according to the following:

a. Possible Out-of-Compliance Status - the Permittee in accordance to R317-6-6.16 shall evaluate the results of each round of ground water sampling and analysis to determine any exceedence of the ground water protection levels found in Part I.B.2 of this permit. Upon determination by the Permittee that a ground water protection level has been exceeded at any downgradient compliance monitoring well, the Permittee shall:

i. Immediately resample the monitoring wells(s) that have exceeded the ground water protection levels, submit the analytical results thereof, and notify the Executive Secretary of the possible out-of-compliance status within 30 days of the initial detection.

ii. Immediately implement an accelerated schedule of monthly ground water sampling and analysis for parameters requested by the Executive Secretary. This monthly sampling will continue for at least two months or until the compliance status can be determined by the Executive Secretary. Reports of the results of this sampling will be submitted to the Executive Secretary as soon as they are available, but not later than 45 days from each date of sampling.

b. Out-of-Compliance Status

i. Notification and Accelerated Monitoring - upon determination by the permittee, in accordance with UAC R317-6-6.17 and Part I.B.3 that an out-of-compliance status exists, the permittee shall:

1) Verbally notify the Executive Secretary of the out-of-compliance status within 24 hours, and provide written notice within 5 days of the detection, and
2) Immediately implement an accelerated schedule of monthly ground water monitoring which shall continue for at least two months or until the facility is brought into compliance.

ii. Source and Contamination Assessment Study Plan - within 30 days of the verbal notice to the Executive Secretary, the permittee shall submit an assessment study plan and compliance schedule for:

1) Assessment of the source or cause of the contamination, and determine of steps necessary to correct the source.
2) Assessment of the extent of the ground water contamination and any potential dispersion.
3) Evaluation of potential remedial actions to restore and maintain ground water quality, and ensure that the ground water standards will not be exceeded at the downgradient compliance monitoring wells.

2. Failure to Maintain Best Available Technology Required by Permit

A verified leak of process fluids beneath the pads or ponds, or an exceedance of the allowable leakage rate (200 gal/acre/day) in the 4,300,000 gallon process water pond shall constitute failure of BAT.

The facility will be determined to be in an out-of-compliance status if BAT has failed or cannot be maintained, or the facility has exceeded the performance standards according to the provisions required for best available technology standard and:

a. The permittee has failed to notify according to Part I.E.2,

b. The failure was intentional or was caused by the permittee's negligence, either in action or failure to act,

c. The permittee has failed to take adequate remedial measures in a timely manner or has not developed an approvable remedial action plan and implementation schedule for restoration of best available control technology, an equivalent control technology, or closure of the facility. Implementation of an equivalent technology will require permit modification and reissuance, and

d. The permittee has failed to demonstrate that any discharge of a pollutant from the facility is not in violation of the provisions of UCA 19-5-107.

G. CLOSURE REQUIREMENTS.

1. The neutralization criteria for the facility will either be as adopted in rules by the Water Quality Board at the time of decommissioning or as approved in writing by the Executive Secretary at the time of decommissioning if prior to adoption of rules. **In no case shall the neutralization criteria for this heap leach project result in degradation of the surface or ground water quality including beneficial uses thereof in the vicinity.**

Neutralization of ore heaps based on the approved criteria must be verified in three (3) consecutive monthly samples of heap leach pad rinsate. The procedure must be submitted in the neutralization plan for review and approval.

2. A closure document shall be submitted for review and approval six (6) months prior to beginning of neutralization of any pads or ponds or reclamation of any sulfide waste rock piles, and to include the following:

   (a) An estimation of the potential for post-closure leaching of contaminants from leach pads and waste rock piles, and justification for the type of cover or cap placed over them to prevent ground water pollution.

   (b) Copies of plans for any soil capping or covering the treated ore, filed with other agencies.

   (c) Plans and procedures for pond closure and pipeline removal.

   (d) A plan for post-closure ground water monitoring.

H. MINE WATER USE.

Water from the mine pits may be used for dust suppression at Barney's Canyon or piped for use at the Copperton concentrator. The water may not be used or disposed of otherwise without prior approval from the Division of Water Quality. The mine pit water must not be discharged from company property.

I. COMPLIANCE SCHEDULE.

1. Accelerated Background Monitoring

   Within 60 days of completion of the accelerated background monitoring required in Part I.E.1(b), the permittee shall submit to the Executive secretary a report which tabulates the results of background monitoring, listing analytical results for all parameters sampled in each well, and computing the mean and standard deviation for each parameter for each individual well.

2. Monitor Well BC-850

   Within 60 days of completion of the monitoring required in Part I.D.1(c), the permittee shall submit a report on the observed ground water chemistry in the well. The report shall include:

   (a) A listing of all analytical data from the well.

(b) A statistical analysis of whether any of the monitored parameters has shown an increasing trend since the well was first sampled.

(c) An evaluation of whether any mining or ore processing activities have affected ground water sampled by the well.

(d) An evaluation of whether the well would be a suitable monitor well for this permit; and if so, a tabulation of means and standard deviations for all the monitored parameters derived from all sampling events since well construction.

The monitoring requirements of this permit may be amended after receipt of this report.

3. Stockpiled Sulfide Ore

Within 30 days of permit renewal the permittee shall submit a revised Waste Rock Management Plan which addresses management of stockpiled sulfide ore to prevent ground water contamination.

PART II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. REPRESENTATIVE SAMPLING. Samples taken in compliance with the monitoring requirements established under Part I shall be representative of the monitored activity.

B. ANALYTICAL PROCEDURES. Water sample analysis must be conducted according to test procedures specified under UAC R317-6-6.3.A.13, unless other test procedures have been specified in this permit.

C. PENALTIES FOR TAMPERING. The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. REPORTING OF MONITORING RESULTS. Monitoring results obtained during each quarterly reporting period specified in the permit, shall be submitted to the Executive Secretary, Division of Water Quality at the following address no later than the 1st day of the second month following the completed reporting period:

Attention: Compliance and Monitoring Program
Utah Department of Environmental Quality
Division of Water Quality
State of Utah
Salt Lake City, UT 84114-4870

The due dates for reporting are: May 1, August 1, November 1, and February 1.

E. COMPLIANCE SCHEDULES. If compliance schedules are included as part of the ground water discharge permit, compliance or noncompliance with interim or final requirements of the schedule shall be submitted no later than 14 days following schedule date for accomplishing the requirement.

F. ADDITIONAL MONITORING BY THE PERMITTEE. If the permittee monitors any pollutant more frequently than required by this permit, using approved test procedures as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted. Such increased frequency shall also be indicated.

G. RECORDS CONTENTS.

1. Records of monitoring information shall include:

a) The date, exact place, and time of sampling or measurements:
b) The individual(s) who performed the sampling or measurements;
c) The date(s) and time(s) analyses were performed;
d) The individual(s) who performed the analyses;
e) The analytical techniques or methods used; and,
f) The results of such analyses.

H. RETENTION OF RECORDS. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the Executive Secretary at any time.

I. TWENTY-FOUR HOUR NOTICE OF NON-COMPLIANCE REPORTING.

1. The permittee shall verbally report any non-compliance which may endanger public health or the environment as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The report shall be made to the Utah Division of Environmental Quality 24 hour number, (801) 538-6333, or to the Division of Water Quality, Ground Water Protection Section at (801) 538-6146, during normal business hours (8:00 am - 5:00 pm Mountain Time).

2. A written submission shall also be provided to the Executive Secretary within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain the information requested in Part I,F.3.
3. Reports shall be submitted to the addresses in Part II D, Reporting of Monitoring Results.

J. OTHER NON-COMPLIANCE REPORTING. Instances of non-compliance not required to be reported within 24 hours, shall be reported at the time that monitoring reports for Part II D are submitted.

K. INSPECTION AND ENTRY. The permittee shall allow the Executive Secretary, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

PART III. COMPLIANCE RESPONSIBILITIES

A. DUTY TO COMPLY. The permittee must comply with all conditions of this permit. Any permit non-compliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Executive Secretary of the Utah State Water Quality Board of any planned changes in the permitted facility or activity which may result in non-compliance with permit requirements.

B. PENALTIES FOR VIOLATIONS OF PERMIT CONDITIONS. The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions is subject to a fine not exceeding $25,000 per day of violation. Any person convicted under Section 19-5-115 of the Act a second time shall be punished by a fine not exceeding $50,000 per day. Nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for non-compliance.

C. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. DUTY TO MITIGATE. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. PROPER OPERATION AND MAINTENANCE. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. UNFORESEEN EVENTS. The conditions of this permit described in Part I.G.2 shall not prohibit the permittee from taking emergency action to prevent the loss of life, personal injury, severe property damage, and to protect public health and the environment.

PART IV. GENERAL REQUIREMENTS

A. PLANNED CHANGES. The permittee shall give notice to the Executive Secretary as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when the alteration or addition could significantly change the nature of the facility or increase the quantity of pollutants discharged.

B. ANTICIPATED NON-COMPLIANCE. The permittee shall give advance notice of any planned changes in the permitted facility or activity which may result in non-compliance with permit requirements.

C. PERMIT ACTIONS. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated non-compliance, does not stay any permit condition.

D. DUTY TO REAPPLY. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit.

E. DUTY TO PROVIDE INFORMATION. The permittee shall furnish to the Executive Secretary, within a reasonable time, any information which the Executive Secretary may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Executive Secretary, upon request, copies of records required to be kept by this permit.

F. OTHER INFORMATION. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Executive Secretary, it shall promptly submit such facts or information.

G. SIGNATORY REQUIREMENTS. All applications, reports or information submitted to the Executive Secretary shall be signed and certified.

1. All permit applications shall be signed as follows:

   a) For a corporation: by a responsible corporate officer.

   b) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

   c) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Executive Secretary shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a) The authorization is made in writing by a person described above and submitted to the Executive Secretary, and,

   b) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to Authorization. If an authorization under Part IV G 2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV G 2. must be submitted to the Executive Secretary prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. PENALTIES FOR FALSIFICATION OF REPORTS. The Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. AVAILABILITY OF REPORTS. Except for data determined to be confidential by the permittee, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Executive Secretary. As required by the Act, permit applications, permits, effluent data, and ground water quality data shall not be considered confidential.

J. PROPERTY RIGHTS. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

K. SEVERABILITY. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

L. TRANSFERS. This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Executive Secretary at least 30 days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,

3. The Executive Secretary does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

M. STATE LAWS. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, penalties established pursuant to any applicable state law or regulation under authority preserved by Section 19-5-115 of the Act.

N. REOPENER PROVISIONS. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. If new ground water standards are adopted by the Board, the permit may be reopened and modified to extend the terms of the permit or to include pollutants covered by new standards. The permittee may apply for a variance under the conditions outlined in R317-6.4(D)

2. This permit will be modified when sufficient data is available to determine protection levels of ground water quality for all elements listed in Table 2 with an asterisk (* or **). The asterisk indicates insufficient data is currently available to determine a background or protection level.